

PATENT ABSTRACTS OF JAPAN

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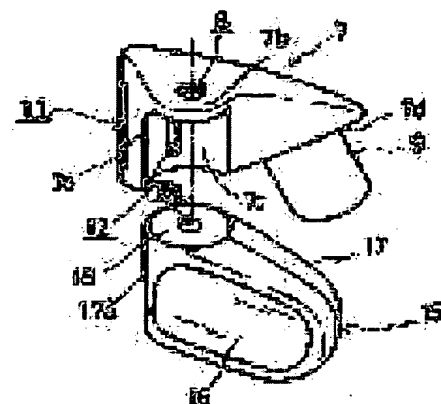
(54) WATER DROP REMOVING DEVICE FOR VEHICLE

(57)Abstract:

PROBLEM TO BE SOLVED: To construct an air duct having an enough passage sectional area in a door mirror base by a simple structure by supporting a door mirror from above in such a manner as to freely oscillate by an oscillating support part of the door mirror base, which is projected from the above, and providing a blowoff port in the middle part.

SOLUTION: An oscillating support part 7b for supporting a door mirror 15 is projected from the upper part of a door mirror base 7 to pivot the door mirror 15 from above in such a manner as to freely oscillate.

Accordingly, an air duct 9 can be easily formed close to a turbo fan under the door mirror base without interfering with the oscillating support mechanism. A enough duct sectional area is ensured and the structure is simplified, so that an excellent water drop removing effect can be produced with enough gas quantity. First and second blow-off ports 11, 12 of the middle part of the door mirror base 7 are positioned at the same height as the mirror 16 of the door mirror 15 to be suitable for removing water drops adhering to the mirror.



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3.In the drawings, any words are not translated.

[Claim(s)]

[Claim 1] The waterdrop stripper both for a vehicle characterized by for the rocking supporter which projected from the upper part of the door mirror base having supported the door mirror free [rocking] than the upper part, having prepared the cowling duct which is open for free passage in the lower part of the door mirror base at a blower, and preparing an outlet in the central part of the door mirror base.

[Claim 2] The aforementioned rocking supporter is a waterdrop stripper for vehicles according to claim 1 characterized by for the pivot installed below having supported pivotably the end face section of the mirror body of a door mirror, and supporting a door mirror free [rocking] from the inferior surface of tongue.

[Claim 3] The aforementioned outlet is a waterdrop stripper for vehicles according to claim 1 or 2 characterized by the bird clapper from the 1st outlet which carried out opening to back in accordance with the superficies of a side window, and the 2nd outlet which carried out opening towards the mirror plane of the door mirror which lodged.

[Claim 4] The waterdrop stripper for vehicles according to claim 1 or 2 characterized by forming the blower which is open for free passage to the cowling duct prepared in the aforementioned door mirror base in the upper part in a door main part in the lower part of the aforementioned door mirror base.

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the equipment from which the waterdrop adhering to the door mirror in which standing up and lodging of an automobile are free is removed.

[0002]

[Description of the Prior Art] Rocking supporter material is usually supporting the door mirror in which standing up and lodging of an automobile are free free [rocking of the end face section of a door mirror] from the lower part. Therefore, when spraying air and removing the waterdrop adhering to the mirror mirror plane of a door mirror, the

cowling duct drawn from a blower will be prepared in rocking supporter material.

[0003] For example, what was indicated by JP,60-157445,U has established the path which leads air to a mirror in the supporter, although standing up and lodging support a door mirror from the side rather than it is free for a door mirror. However, if a door mirror rocks, a cowling duct must be included in one at a rocking mechanism, and structure will become complicated.

[0004] Then, it is a thing which was indicated by JP,4-71363,U using the air tube which has flexibility as a cowling duct, and structure is simplified by supplying the air to the door mirror rocked from the air source of supply by the side of the body to a door with an air tube.

[0005]

[Problem(s) to be Solved by the Invention] however, an air tube -- the exterior -- exposing -- an exterior -- it is not desirable Since it will make appearance increasingly bad if an air tube is made thick and it can seldom enlarge the path cross section, it is difficult for it to obtain sufficient air capacity to blow away the waterdrop of a mirror mirror plane.

[0006] Moreover, when supplying air to a door mirror, it is a problem whether the cowling duct equipped with the path cross section to which how a cowling duct's being formed in the rocking supporter of a door mirror and it can also supply sufficient air capacity is formed without using such an air tube.

[0007] this invention was made in view of this point, and the place made into the purpose is in the point of offering the waterdrop stripper both for a vehicle which can constitute the cowling duct of sufficient path cross section for the door mirror base from carrying out the rocking supporter of a door mirror above a door mirror under easy structure.

[0008]

[Means for Solving the Problem and its Function and Effect] this invention was made into the waterdrop stripper both for a vehicle by which the rocking supporter which projected from the upper part of the door mirror base supported the door mirror freer [rocking] than the upper part, the cowling duct which is open for free passage in the lower part of the door mirror base at a blower was prepared, and the outlet was prepared in the central part of the door mirror base in order to attain the above-mentioned purpose.

[0009] Since the rocking supporter which projected from the upper part of the door mirror base supported the door mirror freer [rocking] than the upper part, the cowling duct of sufficient path cross section for the lower part of the door mirror base should be

formed easily, without interfering in a rocking support mechanism, and it should excel in the waterdrop removal effect in spite of easy structure. In addition, the outlet of the central part of the door mirror base serves as the same height position as the mirror of a door mirror, and is suitable for removing the waterdrop adhering to the mirror.

[0010] In the waterdrop stripper for vehicles according to claim 1, the aforementioned rocking supporter supports pivotably the end face section of the mirror body of a door mirror by the pivot installed more below than the inferior surface of tongue, and supports invention according to claim 2 free [rocking of a door mirror]. With the easy structure where the pivot installed from the rocking supporter supports the end face section of the mirror body pivotably, it can hang free [rocking of a door mirror].

[0011] Invention according to claim 3 consists of the 1st outlet in which the aforementioned outlet carried out opening to back in accordance with the superficies of a side window, and the 2nd outlet which carried out opening towards the mirror plane of the door mirror to which it lodged in the waterdrop stripper for vehicles according to claim 1 or 2.

[0012] The waterdrop with which the air which blew off from the 1st outlet adhered to the side window can be removed, and the air which blew off from the 2nd outlet can remove the waterdrop adhering to the mirror plane of a door mirror.

[0013] Invention according to claim 4 is characterized by forming the blower which is open for free passage to the cowling duct prepared in the aforementioned door mirror base in the upper part in a door main part in the lower part of the aforementioned door mirror base in the waterdrop stripper for vehicles according to claim 1 or 2.

[0014] Since the blower was formed in the upper part in a door main part in the lower part of the door mirror base, the door mirror base is approached, the cowling duct prepared in the lower part of the door mirror base can be shortened, and the ventilation with sufficient efficiency with little loss can be performed.

[0015]

[Embodiments of the Invention] The gestalt of the 1 operation which relates to this invention below is explained based on drawing 1 or drawing 15 . The automatic wagon 1 equipped with the waterdrop stripper concerning the gestalt of this operation is shown in drawing 1 . The door mirror 15 is attached in the front door 2 on either side with the four-door sedan type, respectively.

[0016] As shown in drawing 2 , an opening is consisted inside the outer panel 3, the inner panel 4 is stretched, the sash 5 with which the Johan section carries out framing of the periphery of the side window 6 is formed, the door mirror base 7 is formed at the triangular corner section of the front end of anterior sash 5a which inclined in the

slanting upper part of this sash 5, and, as for the front door 2, the bottom half section is attached in this door mirror base 7 free [standing up and lodging of a door mirror

[0017] The door mirror base 7 is the housing with which side view carried out the shape of a triangle with reference to drawing 3 and drawing 4 , as for the paries lateralis orbitae, the upper part bulges to the method of outside to flat paries-medialis-orbitae 7a which carried out the shape of a triangle, bearing bracket section 7b is formed, and circular concave surface 7c which was able to scoop out the lower part [b / bearing bracket section 7/ the] in the shape of a circular face is formed.

[0018] The boss 8 is drilled in the perpendicular direction by bearing bracket section 7b, and the aforementioned circular concave surface 7c forms the circular face which makes a boss 8 a medial axis. From 7d of bottom walls, the air duct 9 has extended to the lower part, the 1st outlet 11 of long length length carries out opening to posterior-wall-of-stomach 7e towards back along with paries-medialis-orbitae 7a, and the 2nd outlet 12 is carrying out opening to short length length length in the predetermined position of the aforementioned circular concave surface 7c. The 1st outlet 11 and 2nd outlet 12 to the blowdown is possible for the air ventilated from the air duct 9.

[0019] On the other hand, a door mirror 15 supports the mirror 16 which carried out the oblong abbreviation rectangle, and its periphery, and consists the back of the wrap mirror body 17, and bearing 18 is embedded at one edge approach of the upper wall of the oblong mirror body 17.

[0020] Bearing 18 is bearing from which a medial axis serves as an inner ring to which it pointed in the perpendicular direction, and an outside ring which rotates relatively, and the inner skin of an inner ring forms bolthole 18a. The side by the side of the rocking end face of the mirror body 17 forms circular convex 17a by making the medial axis of this bearing 18 into the center of oscillation.

[0021] If circular convex 17a by the side of the end face of this mirror body 17 is fitted into circular concave surface 7c of the aforementioned door mirror base 7, the bearing 18 of the mirror body 17 will approach bearing bracket 7b of the door mirror base 7 from a lower part, will make bolthole 18a of bearing 18 in agreement with the boss 8 of bearing bracket 7b, will penetrate the pivot bolt 20 from the upper part to a boss 8, and will screw in bolthole 18a.

[0022] In this way, a door mirror 15 is supported pivotably free [rocking] with the pivot bolt 20 by bearing bracket 7b located in the bottom. In addition, it has a crevice in the upper limit of the boss 8 of bearing bracket 7b, a cap 21 is attached, and it is made to cover the head of the pivot bolt 20. When a door mirror 15 rocks, circular convex 17a of

the mirror body 17 will **** to circular concave surface 7c of the door mirror base 7.

[0023] Drawing 5 or drawing 7 shows the state where the door mirror 15 stood up, it blockades the 2nd outlet 12 by which circular convex 17a of the mirror body 17 was formed in circular concave surface 7c of the door mirror base 7, and only the 1st outlet 11 formed in posterior-wall-of-stomach 7e is carrying out opening. Therefore, the air which blew off from the 1st outlet 11 along the side window 6 can blow away and remove the waterdrop adhering to the side window 6.

[0024] And drawing 8 or drawing 10 shows the state where the door mirror 15 lodged, it rocks and the 2nd outlet 12 of the door mirror base 7 is opened, circular convex 17a of the mirror body 17 consists some gaps in the mirror 16 which became parallel to the side window 6, and this 2nd outlet 12 carries out abbreviation opposite.

[0025] Therefore, the air which blew off from the 2nd outlet 12 can blow away and remove the waterdrop adhering to the mirror plane of a mirror 16. In addition, air is blowing off also from the 2nd outlet 12, and the waterdrop adhering to the side window 6 can also be blown away simultaneously.

[0026] As shown in drawing 11 , a turbo fan 30 is built into the position of the lower part of the door mirror base 7 in the anterior upper part in the door main part which consists of the outer panel 3 and the inner panel 4 of the front door 2, a communication trunk 25 connects ventilation mouth 31b of a turbo fan 30, and the air duct 9 which extended down the aforementioned door mirror base 7, and air is supplied to the door mirror base 7 from a turbo fan 30.

[0027] The guide sash 27 which shows the side window 6 up and down at the time of opening and closing of the side window 6 is aslant inclined and formed a little [vertical direction] in the door main part at the anterior part of a door main part. The upper limit was located near the back end of the door mirror base 7, and the guide sash 27 is linearly prolonged to the slanting front a little below.

[0028] A turbo fan 30 is arranged in the upper part between this guide sash 27 and the front end edge of a door main part (refer to drawing 11). As the inner panel 4 is shown in drawing 12 , crevice 4a which was doubled with the profile of the fan casing 31 of a turbo fan 30 and which carried out the round shape in general is formed beforehand, and two or more pins 28 are implanted in the periphery of the base of crevice 4a in the predetermined position (refer to drawing 15).

[0029] A pin 28 is set up by substrate 28a, is carrying out the configuration in which nose-of-cam expansion section 28b to which the nose of cam expanded was formed, penetrates the inner panel 4, and is welding substrate 28a to the inner panel 4, and the pin 28 is having the omission from the inner panel 4 prevented [pin] by substrate 28a.

[0030] On the other hand, as shown in drawing 13 and drawing 14 , as for the turbo fan 30, the motor 32 protrudes on the core of the unilateral board of the fan casing 31 with the flat right-and-left width of face which carried out the approximate circle form by side view, and the edge of forced draft air duct 31a which extended from the periphery of a fan casing 31 to the tangential direction has become ventilation mouth 31b.

[0031] Two or more brackets 33 protrude on the periphery of a fan casing 31, as this bracket 33 is shown in drawing 15 , the rubber bush 29 is attached in the circular hole, and stoma 29a of the center of each rubber bush 29 corresponds to the pin 28 implanted in crevice 4a of the aforementioned inner panel 4, respectively.

[0032] Therefore, it fits into crevice 4a of the inner panel 4, and a turbo fan 30 makes two or more pins 28 of the base of crevice 4a insert in stoma 29a of the rubber bush 29 of two or more brackets 33 of the periphery of a fan casing 31, and makes nose-of-cam expansion section 28b penetrate, it has a vibrationproofing function through a rubber bush 29 in crevice 4a of the inner panel 4, and a turbo fan 30 is attached.

[0033] Since it cannot fix with a bolt etc. but a turbo fan 30 can be attached easily, attachment is simplified and improvement in working efficiency can be aimed at. In addition, ventilation mouth 31b of a turbo fan 30 and the air duct 9 which extended down the door mirror base 7 are connected by the communication trunk 25, and a panel is stretched on the inner panel 4.

[0034] Since there is no interference with the side window 6, a regulator, etc., and it is located in the upper part of a door main part, since the turbo fan 30 is arranged within a door main part using the dead space ahead of the guide sash 27, and it is close to the door mirror base 7, the communication trunk 25 which connects ventilation mouth 31b of a turbo fan 30 and the air duct 9 of the door mirror base 7 is also short, and can perform the efficient ventilation with small loss of the flow of a wind.

[0035] And since the mirror body 17 blockades the 2nd outlet 12 of the door mirror base 7 and blows off air only from the 1st outlet 11 in the side window 6, when the door mirror 15 has stood up, even if it uses all the air that a turbo fan 30 supplies for removal of the waterdrop adhering to the side window 6 and is the small lightweight turbo fan 30, removal of waterdrop is possible enough.

[0036] Since the mirror body 17 opens the 2nd outlet 12 and a blow-off wind is led to the mirror plane of a mirror 16 when a door mirror 15 lodges, the waterdrop of the mirror plane of a mirror 16 is removable.

[0037] Since the air which a turbo fan 30 supplies blows off also from the 1st outlet 11, although there is not much air capacity which blows off to a mirror 16, it is enough to blow away the waterdrop of a mirror mirror plane.

[0038] Since the waterdrop of a mirror mirror plane is removed at the time of lodging of a door mirror 15, when a door mirror 15 stands up and runs, the waterdrop of a mirror mirror plane is in the state where it was removed. In addition, turbo-fan 30 the very thing can be small, can obtain large air capacity, and can perform waterdrop removal in a short time efficiently.

[0039] Since the rocking supporter 17b which supports a door mirror 15 projects from the upper part of the door-mirror base 7 and supports a door mirror 15 pivotably free [rocking] from the upper part, it could approach the lower part of the door-mirror base 7 at a turbo fan 30, without interfering in this rocking support mechanism, could form an air duct 9 easily, could secure sufficient duct cross section, has also simplified structure, and can do so the waterdrop removal effect excellent in sufficient air capacity.

[0040] The 1st of the central part of the door mirror base 7 and the 2nd outlet 11 and 12 serve as the same height position as the mirror 16 of a door mirror 15, and are suitable for removing the waterdrop adhering to the mirror. Since the turbo fan 30 was formed in the upper part in a door main part in the lower part of the door mirror base 7, the door mirror base 7 is approached, the cowling duct of the air duct 9 prepared in the lower part of the door mirror base 7 and communication-trunk 25 grade can be shortened, and the ventilation with sufficient efficiency with little loss can be performed.

[0041] Moreover, an air tube etc. is not used for a cowling duct, and an air duct 9 does not appear in appearance and does not bar appearance.

[Brief Description of the Drawings]

[Drawing 1] It is the external view of the automatic wagon equipped with the waterdrop stripper concerning the gestalt of 1 operation of this invention.

[Drawing 2] It is the perspective diagram of a right-hand side front door.

[Drawing 3] It is the decomposition perspective diagram of a door mirror and the door mirror base.

[Drawing 4] It is the isomerism solution perspective diagram seen from another angle.

[Drawing 5] It is an important section perspective diagram at the time of standing up of a door mirror.

[Drawing 6] It is this cross-sectional view.

[Drawing 7] It is this rear-face view.

[Drawing 8] It is an important section plan at the time of lodging of a door mirror.

[Drawing 9] It is this cross-sectional view.

[Drawing 10] It is this rear-face view.

[Drawing 11] It is the side elevation showing the interior-of-a-room side of a right-hand

side front door.

[Drawing 12] It is the side elevation showing the inner panel of a right-hand side front door.

[Drawing 13] It is the side elevation of a turbo fan.

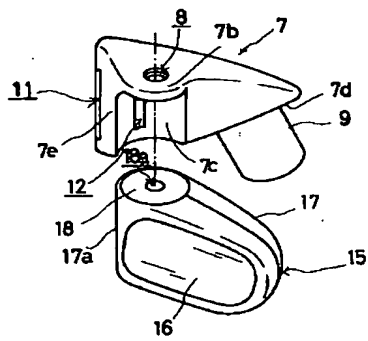
[Drawing 14] It is this elevation.

[Drawing 15] It is the cross section showing the pin implanted in the crevice base by the side of the bracket of the periphery of a turbo fan, and an inner panel.

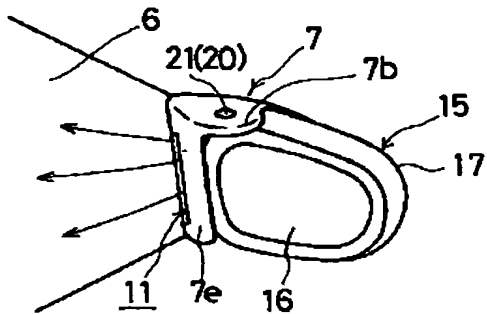
[Description of Notations]

1 [-- An outer panel, 4 / -- Inner panel,] -- An automatic wagon, 2 -- A front door, 3 5 [-- The door mirror base, 8 / -- Boss,] -- A sash, 6 -- A side window, 7 9 [-- The 2nd outlet, 15 / -- Door mirror,] -- An air duct, 11 -- The 1st outlet, 12 16 [-- Bearing, 20 / -- A pivot bolt, 21 / -- A cap, 25 / -- A communication trunk, 27 / -- A guide sash, 28 / -- A pin, 29 / -- A rubber bush, 30 / -- A turbo fan, 31 / -- A fan casing, 32 / -- Motor.] -- A mirror, 17 -- The mirror body, 18

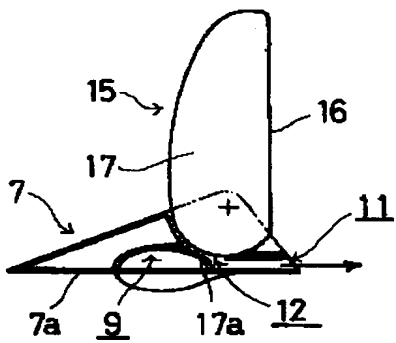
[Drawing 4]



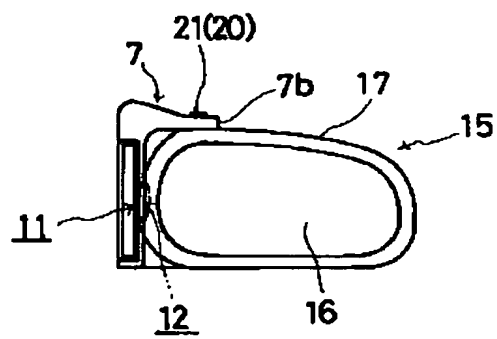
[Drawing 5]



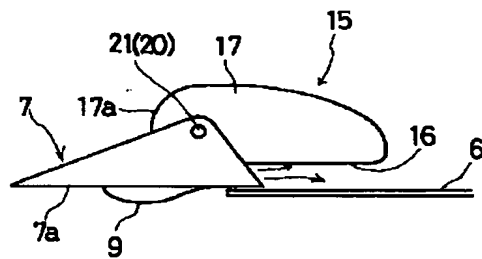
[Drawing 6]



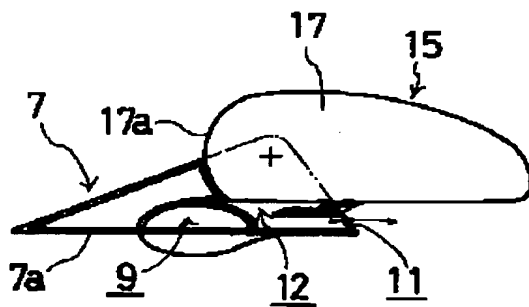
[Drawing 7]



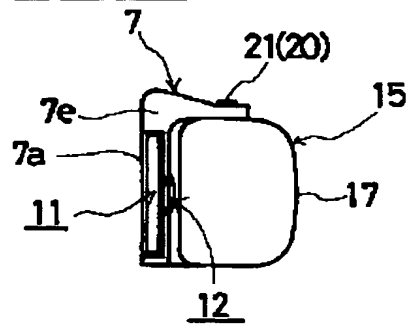
[Drawing 8]



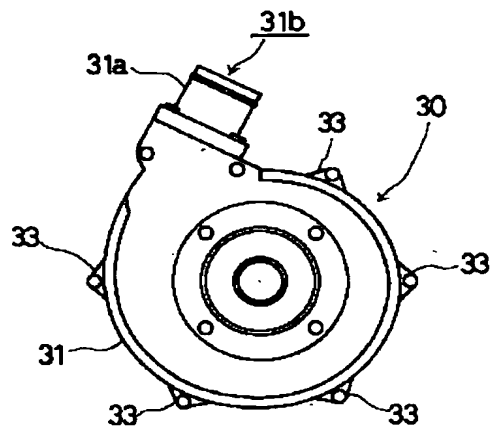
[Drawing 9]



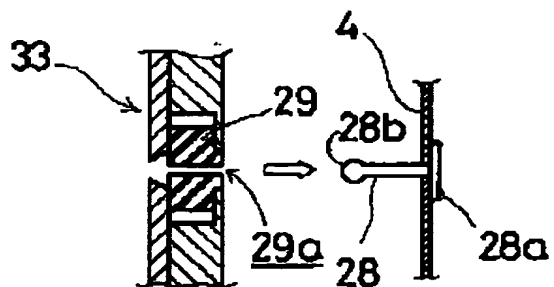
[Drawing 10]



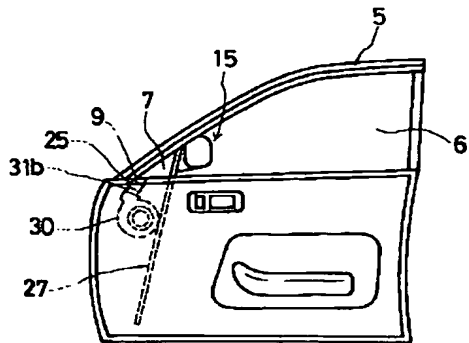
[Drawing 13]



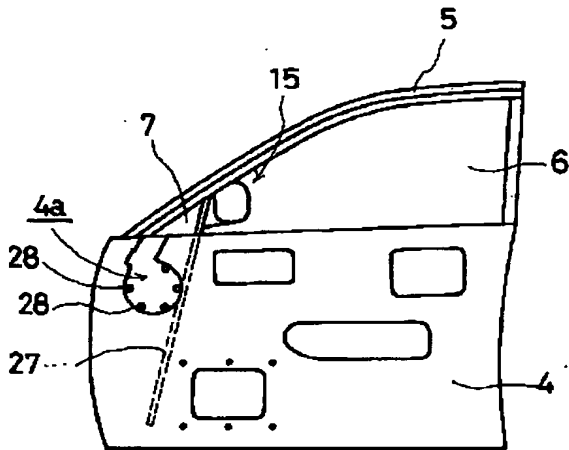
[Drawing 15]



[Drawing 11]



[Drawing 12]



[Drawing 14]

